Why Agriculture Productivity Falls

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Agricultural production saw a major shift at the end of the last century when factors like mechanization, irrigation, fertilizers, and pesticides were introduced by the Green Revolution. Although the benefits brought about by the Green Revolution led to major breakthroughs, with countries aiming for food security, the bubble burst soon after, as productivity began to slow down in developing countries. The existing process of accumulation has resulted in unsustainable agriculture also because of market failures caused by asymmetries of power, diseconomies of scale, and unstable property rights, resulting in arrested productivity growth. Today, the twofold challenge for sustainability of agriculture is to provide more food from a landmass to meet the growing food demands of a population at prices that are accessible for the poor while at the same time minimizing the adverse impacts on the environment.

Mainstream theories are dominated primarily by neoclassical principles, which consider questions pertaining to efficiency and not so much the nature of agrarian transition. An effort is made to transcend the conventional approach to understanding productivity using agricultural inputs and factors of production. In doing so, the framework for understanding capitalist development in the agricultural sector has been discussed through two main approaches — the neoclassical theory that views an economy as being determined through market-based activities, and a Marxist political economy approach suggesting that economies are distinguished not only by their market and nonmarket characteristics, but in terms of their relations of production, which are the relationships of power between classes within a society. It sets the scene on dynamics of contemporary agrarian transition, starting from noting the shifts in land relations, productivity, and class relations, to present-day challenges to sustainability in agriculture. To that end, the discussion entails a combination of both ethnographic and empirical
approaches to analysis, presenting a comprehensive, well-balanced lens through which to perceive agrarian transition in developing countries.

It contests a number of theoretical positions on the relationship between market and nonmarket transactions and productivity growth in agriculture. First, it is demonstrated that the inverse relationship thesis that smallholders are more productive does not hold as their higher productivity is based on intensive self-exploitation and works within a narrow range. Second, although land fragmentation is increasing in the country, such increase is not the outcome of the greater productivity of smallholders, but because of demographic forces. Third, nonmarket forces are driving the agrarian transition in the country more than market forces. Fourth, the structure of political power has been acting as a constraint on both market and nonmarket land transactions to prevent a significant productivity transformation. Finally, the thesis argues that the existing process of accumulation has resulted in nonsustainable agriculture because of market failures caused by asymmetries of power, diseconomies of scale, and unstable property rights, resulting in arrested productivity growth.

**SIZE–PRODUCTIVITY RELATIONSHIP**

The inverse size–productivity hypothesis, which holds that smaller farms are more productive than larger ones, has to date remained the dominant view in policy circles. Originating from statistical observations and backed by neopopulist arguments, the thesis has been adopted by international organizations. If true, land fragmentation could be seen in a positive light with regard to productivity, as larger farms breaking up into smaller parcels would mean an overall increase in productivity. This investigation shows that smallholders may be more productive, but they produce at suboptimal levels with a ceiling on their level of productivity caused by scale diseconomies and high unit costs of production in terms of most factors. At the national level, the number of smallholders in the country has increased significantly, yet agricultural growth and productivity have not accelerated. The discrepancy between the operated areas held by land owners vis-à-vis tenants has increased over time in favor of the latter as well. In effect, smallholders are counteracting the effects of fragmentation by accessing land through tenurial relationships. People who are not direct producers have procured lands as a form of savings and leased out. This has a direct bearing on productivity. Since tenants have grown in numbers as their ownership of holdings decreased, it implies that the higher yields of smallholders are not enough for them to actually purchase land.

The explanation for this is that the productivity of smallholders actually results from desperation, rather than greater capitalist efficiency. Smallholders are compelled to produce more from small parcels of land because of their compulsion to survive in the
absence of any alternative livelihood options in rural areas. This observation, where it holds true, may be interpreted to suggest that smallholding peasant agriculture is actually inefficient. The high labor inputs of petty producers are an imposition, one not voluntarily chosen by them. Small producers, in most cases, who are by and large mostly tenants, are compelled to produce a surplus equal to rent over and above the average, achieved through the intensive use of labor with a higher rate of exploitation.

Second, land fragmentation is leading to suboptimal productivity growth despite relatively higher yields. Land fragmentation has adverse scale effects for smallholders. Problems like loss of crop yield, mechanization, irrigation, and reduced labor productivity arise due to land fragmentation. For example, when a large or medium plot is divided into three to four small plots, a significant quantity of productive land is lost.

Third, technology is assumed in the mainstream analysis to be scale-neutral. In reality, there are scale biases against smallholders even with very simple technology. Mechanization, particularly the use of power tillers, takes a toll due to lack of economies of scale of smallholders, also leading to suboptimal productivity growth. For example, an additional amount of fuel is required if the plot size is smaller. On average, hours of productive time are lost from a working day if the plot area is smaller. Effects of land fragmentation on irrigation are also found to be significant.

Fourth, dominant groups at the village level have little incentive to increase agricultural productivity through a revamping of the tenurial framework. Ending a system of sharecropping would not only have the effect of undercutting the landlords’ ability to expropriate surplus production, but also undermine the reaping of profits in trade by exploiting the indebtedness perpetuated by sharecropping.

Fifth, the production process is further undermined by climate change and land degradation, linked again in a circular way to the issue of population size and associated land fragmentation. Since land is scarce in Bangladesh and the country is densely populated, too many people have to work on too little land. The precarious conditions created by these factors are magnified by the absence of adequate growth-promoting institutions, limited new technologies, and an unstable political settlement.

PRODUCTIVITY AND PRODUCTION INPUTS

Neoclassical economics predicts that once transaction costs are lowered, less productive farmers will sell their land (and will benefit from this sale) to more productive farmers, who will thus begin to dominate the market. As opposed to these perspectives, land fragmentation is increasing, not because of the greater productivity of smallholders but because of demographic forces. The increase in the number of households has a positive correlation with increasing land fragmentation. Population growth was the major
reason behind land fragmentation. Capitalist development has not yet wiped out the smallholders in Bangladesh, largely due to the nature of the process of differentiation, which has led to the eventual pauperization of the landless farmers, leading to a shift in land relations that is not accompanied by an increase in productivity.

The breaking up of landholdings as families expand and disperse is a much more powerful force behind land fragmentation than productivity differentials driving land transactions. Apart from division of land between siblings, land sales coincide with the rapid growth of young families. Early marriage is reportedly a driver and when families grow quickly, households are forced to sell to generate cash. Additionally, some fragmentation happens because many households suffer land loss due to river erosion.

Second, land fragmentation in terms of cropped land is also the result of increasing migration and remittances. In migrating households, women and aging parents sharecrop or mortgage out some of their owned land, thereby breaking it up into smaller operational units, and live on the proceeds from this arrangement, given that they also have remittances from members of their family. Even if they want to, they are unable to work the land without the help of the younger men who have gone abroad. Larger farmers tend to lease out or sharecrop their land and funnel investments into business or migration rather than reinvesting in the land.

Third, the cost of marriage—paying a dowry for daughters—also plays a role in loss of land and fragmentation. Families with young children are caught between not having enough family labor to work on the land and having too many young mouths to feed. This too results in land sales and poor peasants are forced to rely on their labor to sustain the family. Thus, nonagricultural variables are responsible for land transactions in declining households.

Fourth, fragmentation is a more powerful tendency than anything else and not so easily counteracted. Land concentration is not evident. Families could often trace back their lineage within the same locale for many generations. For the large landholders, fragmentation of land over time has been occurring at such a rapid pace that any concentration could not happen at a rate that could possibly match or negate the effect.

Since the Green Revolution, elements like fertilizers, pesticides, modern seed varieties, and irrigation have become key factors of production that have now gone on to significantly impact productivity. Farmers have now moved away from traditional fertilizers to chemical or synthetic ones as natural fertilizers have failed to cope with deteriorating soil quality. At the same time, hybrid seed varieties focusing on high yield have gained popularity and raised overall production. Countries are now in the race toward achieving self-sufficiency and food security, which has raised the intensity of cropping. Multicropping as well as hybrid modern crop varieties have allowed the countries to significantly increase yield. The use of fertilizer in farming has also caused a spatial inequality within countries. Access to fertilizers is not equal in all places. Inaccessibility
may arise from the price and supply of fertilizer. In one village, small farmers were reluctant to practice multicropping and use hybrid seeds due to the greater requirement for fertilizer. Hybrid crops require a higher amount of fertilizer, which often discourages small farmers who cannot afford such an amount. Besides, multicropping means farming during the dry season and that requires advanced irrigation methods. Lack of mechanization in irrigation limits the ability to grow crops year round.

MARKET AND NONMARKET DRIVERS OF AGRARIAN TRANSITION

The research engages with the debate on the market and nonmarket forces driving agrarian transition. Market-based accumulation refers to the transaction of land through formal and institutionalized contracting structures, whereas primitive accumulation is the nonmarket reallocation of land and is common in transition economies before capitalism has become dominant. The neoclassical perspective goes further to assume that land transactions are based on a “merit-based” system where the price offered reflects the ability to use land productively. Success in land acquisition therefore reflects industriousness. The so-called “market-based accumulation,” however, can take place in a very “primitive” fashion as well. Whether accumulation of land takes a “primitive” or “market based” form, the research demonstrates that it is not driving a rapid capitalist transition.

First, if markets are to drive productivity growth toward a capitalist transition, land has to be transferred to more productive land users. Productive peasants, however, do not have the capacity to buy land due to high land prices, which is a result of land purchases by people who often have incomes outside agriculture. Especially in the surveyed areas, the money for purchasing land usually comes either from remitting income from cities or abroad, or from industry or other activities. People who have access to income from outside agriculture are buying and renting, leasing and mortgaging land. They are not, however, engaging in such transactions to enhance productivity or because they have already achieved high productivity, but to invest in a store of value, which paradoxically can have negative effects on growth potential. Thus, market-based land transfers are not driven by productivity differences, as assumed in the neoclassical argument and in versions of the Leninist differentiation thesis.

Second, capitalism has not yet eliminated smallholders. Landlessness has been increasing, resulting in what can be termed “pauperization” as opposed to “polarization,” and smallholdings have actually become more dominant than in the past. Market transactions of land mainly involve the landowning class, and it is the small and marginal farmers who are mostly engaged in lease or mortgage relationships.
Third, the view that capitalist transitions occur through benevolent compulsions to enhance production is a fallacy that continues to drive neoclassical perspectives on what is required for a smooth transition to capitalist agriculture. Establishing ownership rights on land has become highly competitive due to its paucity. This intense competition over the accumulation of land manifests itself in nonmarket processes of primitive accumulation, which are not only fiercely competitive, but also result in violent insecurity for ordinary people in the form of threats, killing, ransom, and rape. This type of primitive accumulation operates through a nexus of entrepreneurs and political factions and their allies in the administrative, law enforcement, and judicial systems. A “merit-based” process of land transactions where success follows from productivity is far from the reality in Bangladesh.

Fourth, input-output markets for agricultural products are often interlocked and the source of insecurity for farmers as the sector has become much more dependent on the market supply of inputs over the years. For instance, when smallholders have to borrow money when harvests collapse or when competing demands are made on the household earnings, they are forced to borrow more in order to pay it back. Many farmers have to sell their crops before they are even harvested in order to get the money they need for inputs and household needs. If their crops fail, they can become landless. Most farmers cannot afford to preserve their rice till prices rise, since they need cash immediately at the end of the harvest in order to meet family expenses, debt repayments, and purchases of inputs for the next season. In addition, most families do not have homes large enough to store produce for longer periods of time. Thus, the markets are decisively imperfect and act against the assumptions of neoclassical economics. The operation of smallholders in these intermediary-manipulated markets leads to inequality, dispossession, and low productivity.

**POWER, INSTITUTIONS, AND PRODUCTIVITY**

Transfers of land are largely dominated by nonmarket processes in the form of primitive accumulation, as opposed to market-based accumulation. The configuration of power across competing political factions means that the agrarian transition is slow and sometimes even blocked. The different tenurial arrangements that have emerged and are upheld, or which shift according to changes in socioeconomic structures, represent the complexities in the agrarian transition. In the study, in certain villages it appears that sharecropping systems of the rent-in-kind nature have not only persisted but have been augmented. In other villages, forms of mortgaging agreements have emerged and rapidly expanded to meet changing needs and demands. A number of characteristics of
these processes are relevant. First, people are powerful in rural areas because of their family and/or social networks and sometimes because they are rich in land. While land is an important source of power, political networks and collusion with or membership in ruling political factions are also equally important.

Second, financial power can originate outside the agricultural sector in sources such as remittances and nonagricultural businesses as well as through political accumulation in the past. Politically involved landowners are likely to experience a fall or a rise in their landholdings reflecting the shifts in the distribution of power across factions. The cycling of land through primitive accumulation across different factions makes it different from the prototypical capitalist model of agricultural transition based on primitive accumulation where land concentration can rapidly take place. Third, the structure of patron-client networks, differences in initial conditions of land productivity, and technological opportunities jointly explain why primitive accumulation takes specific forms in different parts.

Fourth, the so-called market-enhancing reforms adopted at the behest of international financial institutions and “development partners” have proved unhelpful to direct producers. The weak position and feeble bargaining capacity of the ruling elite vis-à-vis their international partners have not allowed independent and pragmatic policymaking. In a liberalized market, for example, the bargaining power of poor farmers has deteriorated with damaging effects on poverty reduction.

**DIFFERENTIATION AND TRANSITION**

Bangladesh, like many developing countries, is not experiencing a classical agrarian transition. The continuance of fragmentation of plots due to demographic changes increases the number of smallholders while the agrarian system continues to remain skewed against the poor cultivators, and both processes increase landlessness, with laborers in distress.

It seems that Bangladeshi agriculture has neither been able to provide a surplus to the nonagriculture sector—rather, a majority of the transactions in agriculture are financed by nonagricultural sources including remittances—nor has it been adept in generating a major rural market for industrial produce. The village studies, nevertheless, demonstrate that surplus value created in agriculture feeds into the accumulation of traders-cum-moneylenders through interlocked markets, and agro-industries and multinational companies providing inputs and machines such as seed, water, fertilizer, and pesticides.

The number of smallholders is increasing, and the range of farm sizes is actually quite narrow. Even “large” farms are in fact quite small in absolute terms. There has been falling profitability of agricultural production. The large farmers are engaged
in rent extraction while the peasantry is being pauperized, and the majority of trans-
actions are financed by nonagricultural incomes, including remittances from family
members living outside the village, as the surplus is not enough to finance such trans-
actions. Small farmers exhibit the greatest tenacity in holding on to their last pieces of
land. The hiring of labor by small farmers does not make them “capitalist” since even
petty commodity producers need to employ labor during peak periods. The employ-
ers of labor are too numerous for large landlords to attempt to play a monopsonic role
in the labor market in Bangladesh and countries like it.

The increase in landlessness points out that the absorption in the formal labor mar-
ket has contracted while most of the absorption is in the informal sector, with agricul-
ture still remaining the largest employer. Analysis of the wage structure demonstrates
the distress of the laboring classes.

State support in the form of public expenditure in agriculture has witnessed a down-
ward trend, particularly after the neoliberal reforms. For example, the poor cultiva-
tors have limited access to institutional credit and ownership of technological devices.

The agrarian development and agrarian transition should be understood in rela-
tion to the wider (nonagrarian) economic developments in society, as political settle-
ment and primitive accumulation permit (inhibit) property rights being reallocated
in growth-enhancing directions.

**SUSTAINABILITY AND HUMAN SOCIALITY**

Agricultural production experienced a major shift at the end of the last century when
factors like mechanization, irrigation, fertilizers, and pesticides were introduced. Sus-
tainability in agriculture means the ways of practicing farming that maintain the long-
term viability of the agricultural enterprise through environmental protection and con-
sumer safety. It is a management strategy that allows farmers to select the appropriate
varieties of seed, conserve soil, balance sources of water for irrigation without destabi-
lizing groundwater, use a fitting mix of fertilizer without hurting soil nutrients, prac-
tice nonexcessive use of pesticides, and so on in line with these goals. Sustainable agri-
culture largely contributes to minimizing adverse impacts on the environment, ecology,
and ecosystem, and at the same time provides a sustained level of production and con-
servation of natural resources and biodiversity.

The main challenges for sustainability in agriculture originate from the need to
produce more food from a rapidly fragmenting landmass in order to meet the expo-
nentially increasing demand for food due to the population size. At the same time, the
prices have to be affordable to all income groups in the population, while ensuring that
lower prices are not achieved at the expense of adversely affecting the environment. In
order to overcome these challenges to ensure sustainability in agriculture, it is imperative to emphasize the practice of human sociality in production and consumption. Developing a human–nature reversible relationship will constitute perceiving nature as the melting pot for humans and other living beings existing in cohabitation, coexistence, and co-dependence. The human–nature relationship goes beyond perceiving nature only as an asset and will therefore govern decisions of production and consumption that lead to a balanced coexistence and sustainability. In Bangladesh, while the riverine land has experienced great fertility, the country has seen the rage of nature as well in the form of disasters. The issue of living in harmony with nature, however, has always been neglected in the country’s development. Human beings consider nature as the supplier of mere commodities that provide monetary value, which therefore leads to overextraction of natural resources as well as little concern for nature’s well-being. The relationship between nature and humans has become lopsided as more natural resources are being extracted without pondering on the consequences. Restoring natural resources can be done through strengthening both formal and informal institutions and streamlining the flow of productive resources, technology, and innovation through these institutions. The strength of formal and informal institutions can further allow greater economic and climate resilience of the community, which will generate stronger adaptability and the ability to cope with shocks, as part of developing human sociality with the forces of nature.